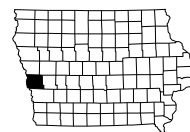


HARRISON CO.

**RCB CULV. REP. - TWIN BOX
BRFN-030-1(166)--39-43**

LETTING DATE
NOV 16, 2021



For Project Location Map
Refer to Sheet No. A.02

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 2	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	U.S. Highway 30
G Sheets	Survey Sheets
G.1 - 2	Reference Ties and Bench Marks
G.3	Horizontal Control Tab. & Alignment Coordinantes
J Sheets	Traffic Control and Staging Sheets
* J.1	Traffic Control Plan
* J.1	Staging Notes
* J.2 - 3	500 Series, Modified Standards and Detail Sheets
V Sheets	Bridge and Culvert Situation Plans
* V.1	Cast in Place Culvert Situation Plans
* V.2	Precast Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 6	Mainline Cross Sections
	* Color Plan Sheets



Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

HARRISON COUNTY

RCB CULVERT REPLACEMENT - TWIN BOX

US 30 CULVERT - WILSON DITCH 2.1 MI W OF I-29

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



REVISIONS

TOTAL
20
PROJECT IDENTIFICATION NUMBER
17-43-030-040
PROJECT NUMBER
BRFN-030-1(166)--39-43
R.O.W. PROJECT NUMBER
NHSN-030-1(167)--2R-43

D4 PLAN - Date: July 20, 2021

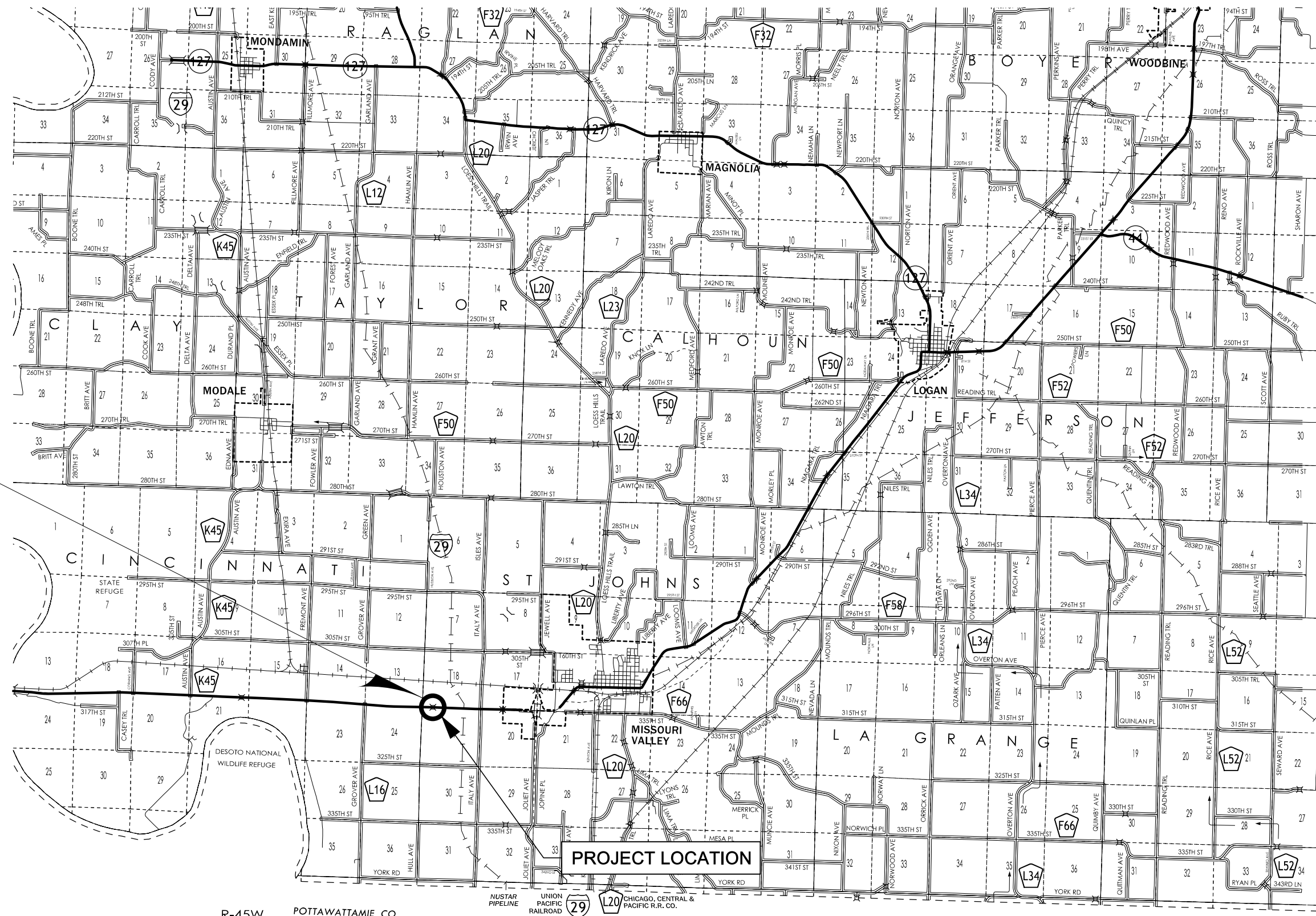
DESIGN DATA RURAL			
2021	AADT	4600	V.P.D.
2041	AADT	5400	V.P.D.
2041	DHV	560	V.P.H.
	TRUCKS	26%	%
	Total		
	Design ESALs	--	

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Wade D. Harris	Primary Signature Block

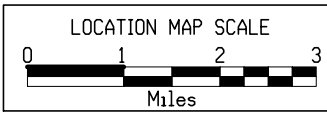
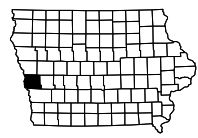
PRELIMINARY PLANS

Subject to change by final design.

D5 PLAN-Date: August 23, 2019



U.S. 30 BRIDGE REPLACEMENT
 2.1 MILES WEST OF I-29
 EXISTING BRIDGE
 FHWA NO.: 27360
 MAINT. NO.: 4307.IS030
 STA.: 383+78

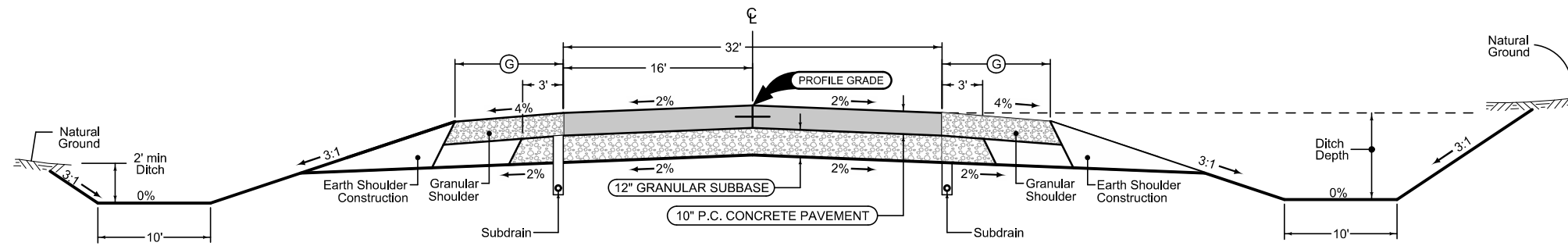


Granular Shoulder

2_G_SR_		Ⓞ
10-19-10		
STATION TO STATION		Feet
381+80.22	385+73.96	6

Granular Shoulder

2_G_SR_		Ⓞ
10-19-10		
STATION TO STATION		Feet
381+83.42	385+73.96	6



Mainline Jointing:
 Transverse joints: CD at 20' spacing
 Longitudinal joint: L-2

2P_	
10-19-10	
STATION TO STATION	
382+03.22	385+59.67

See Tab 100-24 or 100-25 for pavement quantities.
 See Tab 112-9 for shoulder quantities.

U.S. HIGHWAY 30

SURVEY SYMBOLS

- BCL Bridge Centerline
- BD Bridge Deck
- BL Topo Breakline
- BRG Bridge
- C Centerline BL of Road (ML or SR)
- CP Control Point
- D Centerline Draw or Stream (Down)
- EG Edge of Gravel Road
- EP Edge of Paved Roads (ML or SR)
- EL1B Electric Line Co. 1 - Quality B
- GDL Guard Rail Steel
- GR Ground Shot
- MIS Miscellaneous
- PIP Pipe Culvert
- PPA Power Pole Co. 1
- RET Retaining Walls
- SIGN SI Sign
- TP TPD Telephone Pedestal
- TW Top of Water
- FO1C Fiber Optic Co. 1 - Quality C

UTILITY LEGEND

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
 QLA Quality Level A Highest guideline quality level
 QLD Quality Level D Lowest guideline quality level

- MidAmerican Energy - Quality B
- PPA Power Pole MidAmerican Energy
David Fitch
712-366-5669
dfitch@midamerican.com
- TP TPD Telephone Pedestal
Centruylink - Quality C
Tom Sturmer
720-578-8090
Thomas.sturmer@centurylink.com

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design	Color No.	Description
Green	(2)	Green	Existing Topographic Features and Labels
Blue	(1)	Blue	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Magenta	Existing Utilities
SHADING			
Design	Color No.		
Yellow	(4)	Yellow	Highlight for Critical Notes or Features
Red	(3)	Red Hatched	Delineates Restricted Areas
Lavender	(9)	Lavender	Temporary Pavement Shading
Gray, Light	(48)	Light Gray	Proposed Pavement Shading
Gray, Med	(80)	Medium Gray	Proposed Granular Shading
Gray, Dark	(112)	Dark Gray	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Light Brown	Grading Shading
Tan	(8)	Tan	Proposed Sidewalk Shading
Blue, Light	(230)	Light Blue	Proposed Sidewalk Landing Shading
Pink	(11)	Pink	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design	Color No.	Description
Green	(2)	Green	Existing Ground Line Profile
Blue	(1)	Blue	Proposed Profile and Annotation
Magenta	(5)	Magenta	Existing Utilities
Blue, Light	(230)	Light Blue	Proposed Ditch Grades, Left
Black	(0)	Black	Proposed Ditch Grades, Median
Rust	(14)	Rust	Proposed Ditch Grades, Right

- Reference Point
- Station
- ▲ Section Corner
- Ground Line Intercept
- //// Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- ▨ Pavement Removal
- ▩ Clearing & Grubbing Area

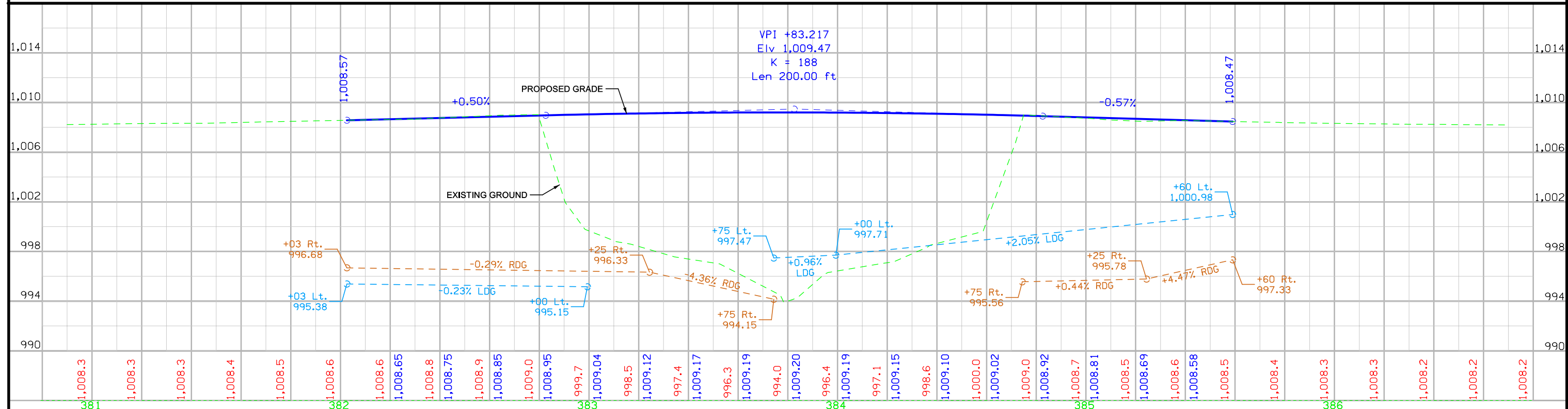
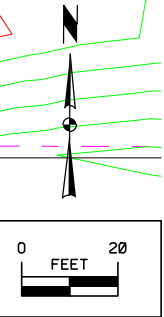
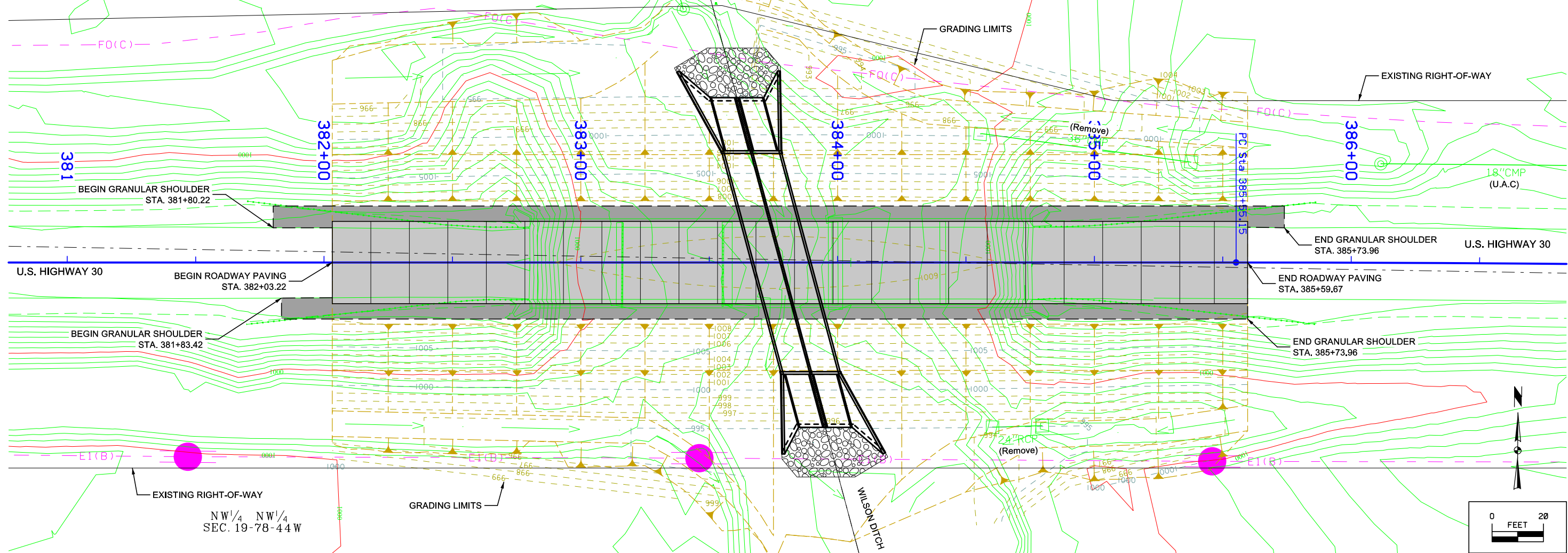
RIGHT-OF-WAY LEGEND

- ▲ Proposed Right-of-Way
- △ Existing Right of Way
- ▲ Existing and Proposed Right-of-Way
- ▲ Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- ← Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D, E, F, & K)

SW 1/4 SW 1/4
SEC. 18-78-44 W



Survey Information

Harrison County
BRFN-030-1(166)-39-43
U.S 30 Bridge over Wilson Ditch
2.1Mi W of I-29
PIN 17-43-030-040
Sap-08673

General Information

Measurement units for this survey are US survey feet. This survey is for proposed Bridge reconstruction and reconstruction of U.S.30 over Wilson Ditch. Project datum and control information is provided by Shive-Hattery Inc.. This project is a Preliminary Survey and control Points. This survey request was for the U.S 30 corridor, Bridge and Wilson Ditch.

Vertical Control

(IARTN + 3 Wire Example)

Vertical datum for this survey is NAVD88 (Computed using Geoid12A). GRS80 Ellipsoidal Height was computed at project Pt. 1, by averaging a minimum of five observations with appropriate time spans between from nearby Iowa RTN reference stations. The vertical standard deviation of these observations were less than 0.02 ft. at 95% confidence level (2 sigma). Additional benchmarks were established with a level loop relative with Pt. 1. The loop error met 3rd Order accuracy and the error was distributed proportionately among the project bench marks.

Horizontal Control

(Project Coordinates from Redundant IaRTN Observations)

The project coordinate system is modified Iowa Regional Coordinate System Zone 6 (U.S. Survey Feet) scaled around Pt. 1 at 7073757.993 N, 16440398.39 E, 1007.098 EL. Horizontal datum is NAD83 (2011) for Epoch 2010.00. Coordinates were determined by averaging a minimum of five IaRTN observations with appropriate time spans between. The horizontal standard deviation of these observations was less than 0.04 ft. at 95% confidence level (2 sigma). Additional control points were placed throughout the project using a GNSS Base-Rover setup relative to Pt. 1. A minimum of three observations with appropriate time spans between were averaged. The horizontal standard deviation of these observations was less than 0.02 ft. at 95% confidence level (2 sigma).

1/Combined Scale Factor of project= 1.000039000

The 1/Combined Scale Factor, scaled about Pt. 1, may be used for GNSS stakeout and location to survey in the Project Coordinate system. A scale factor of 1 should be used with total station stakeout.

Alignment Information

The horizontal alignment for this survey is a retrace of As-built Plans No. ERF - 30(3). Survey stationing was equated to the plan centerline of bridge at STA 383+78.00 and run back and ahead without equation throughout the survey.

Survey stationing relates to as built plan stationing as follows:

POT Sta. 380+91.6 Project No. ERF - 30(3)

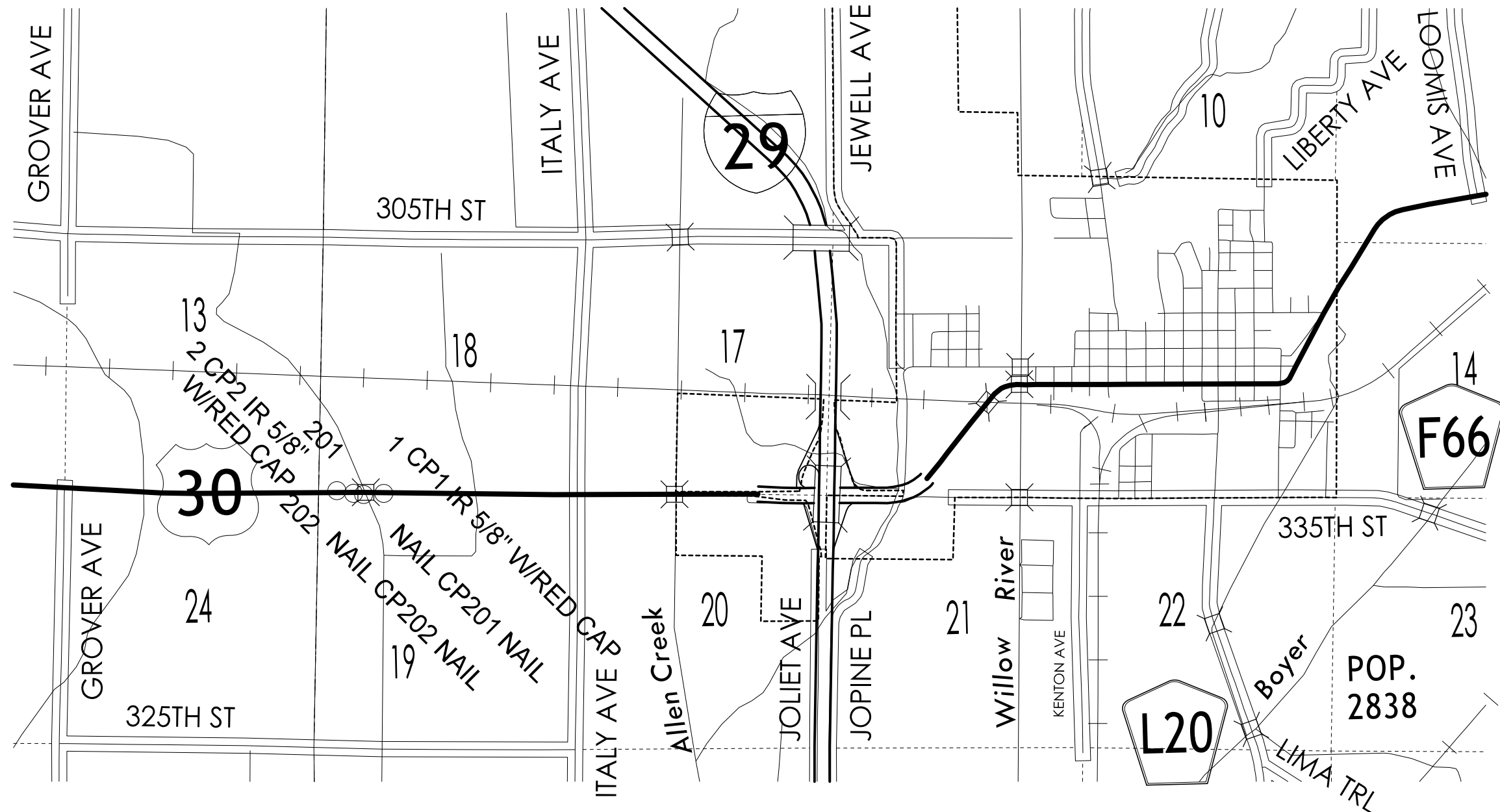
P.C. Sta. 385+55.5, 1°12' RT Project No. ERF - 30(3)

P.I. Sta. 387+05.5, T = 150, L = 300 Project No. ERF - 30(3)

P.T. Sta. 388+55.5, 1°12' RT Project No. ERF - 30(3)

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points
 Primary control is for use with RTK base stations and for RTN validation.
 Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

1a. Regional Coordinate System Zone 6

Coordinate listing from next sheet will be used with 1aRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING

HORIZ. DATUM: NAD83(2011) EPOCH 2010.00

VERT. DATUM: NAVD88

Ia. Regional Coordinate System Zone 6

Point Name	Northing	Easting	Elevation	Feature Definition	Description
1	7073758.003	16440398.390	1007.106	CP1	IR 5/8" W/RED CAP
2	7073803.876	16439663.04	1006.685	CP-RED CAP	IR 5/8" W/RED CAP
201	7073735.237	16439979.850	997.284	CP201	NAIL
202	7073759.056	16439771.280	1007.170	CP202	NAIL

ALIGNMENT COORDINATES

This Data Entry Sheet fills Tab 101-16 effective 10-20-09

Name	Location	Point on Tangent		Begin Spiral		Begin Curve		Simple Curve PI or Master PI of SCS			End Curve		End Spiral			
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
ML0301	US 30							359+96.51	7073766.43	16437651.14						
ML030	US 30					385+55.15	7073783.46	16440209.72	387+05.16	7073784.46	16440359.73	388+55.15	7073782.32	16440509.72		
ML0306	US 30								421+81.75	7073734.80	16443835.97					
ML0307	US 30								427+58.19	7073736.77	16444412.41					

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.

1

ROBERT E & CHERYL L MARTENS
JACK A & JOAN MARTENS

SW 1/4 SW 1/4
SEC. 18-78-44W

SE 1/4 SW 1/4
SEC. 18-78-44W



382+40
±98' EX. R/W

383+20
±120'

383+75
±120'

385+95
±63' EX R/W

382+80
±80' EX R/W

383+54
±123'

385+07
±123'

385+55
±80' EX R/W

NW 1/4 NW 1/4
SEC. 19-78-44W

NE 1/4 NW 1/4
SEC. 19-78-44W

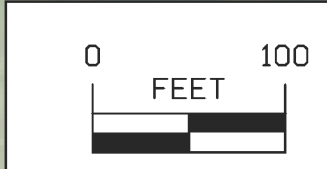
2

GERALD R CHRISTENSEN TRUST

WILSON DRAINAGE DISTRICT
SUB DISTRICT W (DISTRICT NO. 2)

2D

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team: ATINKEN/JLARSON	
ROW #: NHSN-030-1(167)--2R-43	
Plan Date: 11/4/19	
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



108-23A
08-01-08

TRAFFIC CONTROL PLAN

1) While EB lane of roadway and bridge is being removed, reduce traffic to one lane using temporary signals. (Per TC-217)

2) While WB lane of roadway and bridge is removed, reduce traffic to one lane using temporary signals. (Per TC-217)

3) While EB temporary pavement is removed and placed back, reduce traffic to one lane using temporary signals. (Per TC-216)
Reopen both lanes to traffic after permanent pavement has been placed.

108-26A
08-01-08

STAGING NOTES

Stage 1:
Proposed RCB culvert to be constructed under existing bridge prior to Stage 1 demolition work. Reduce traffic to one lane. EB lane of existing bridge to be removed. Place temporary pavement in roadway removal area.

Stage 2:
Remove WB lane of existing bridge (1-ft beyond roadway centerline and re-pave WB lane.

Stage 3:
Remove temporary pavement and re-pave EB lane. Reopen both lanes to traffic.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

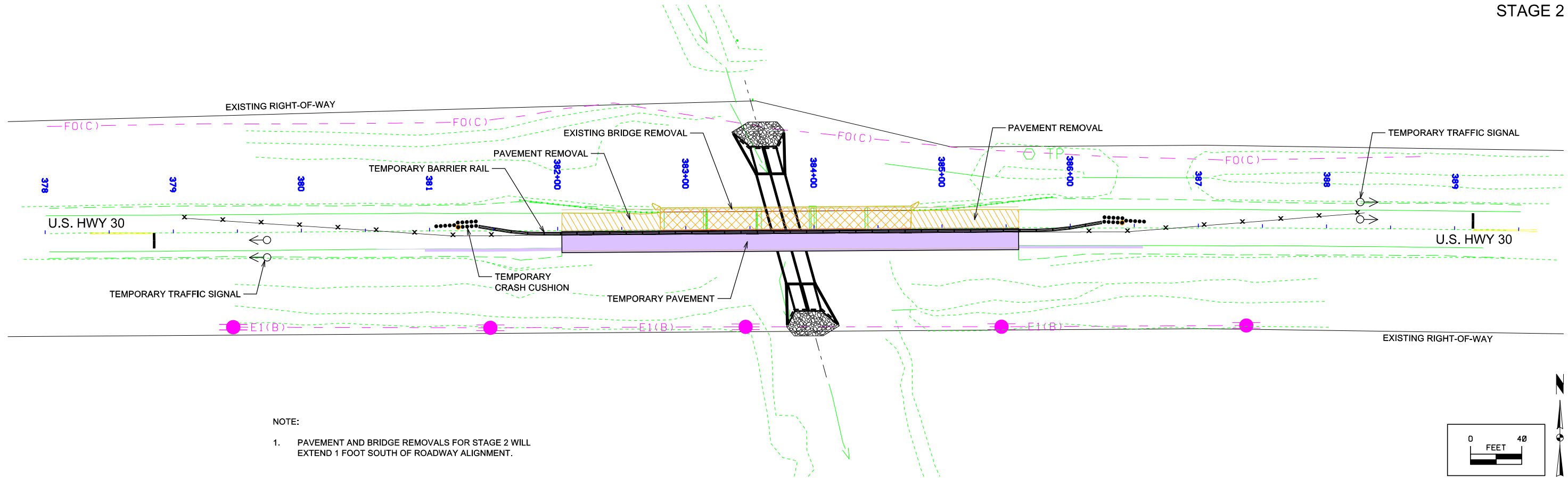
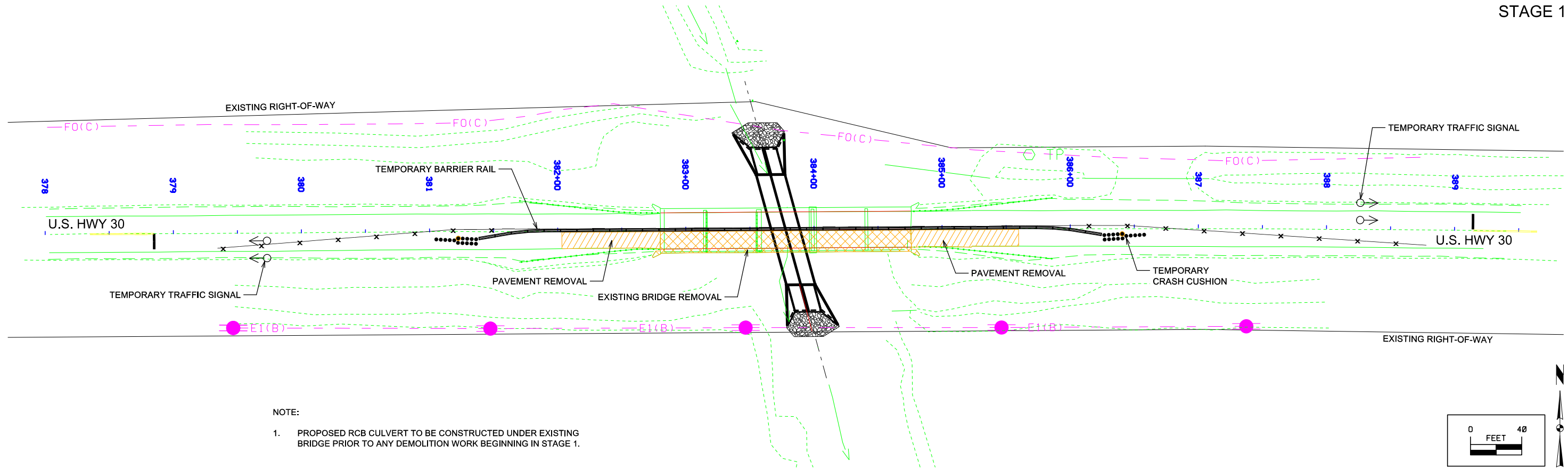
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
US 30	Both	Harrison	2.1 Miles West of I-29	Wilson Ditch	Temporary Signal	Vertical						
					Traffic Control Device	Horizontal						

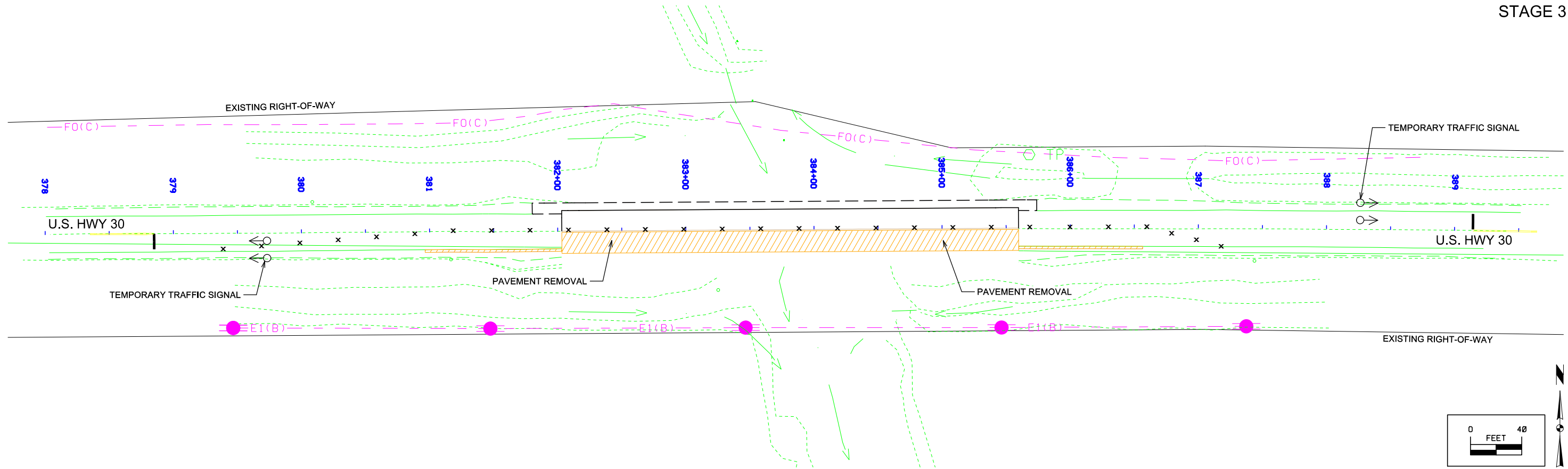
111-01
04-17-12

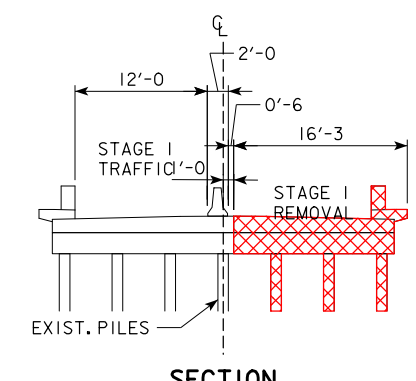
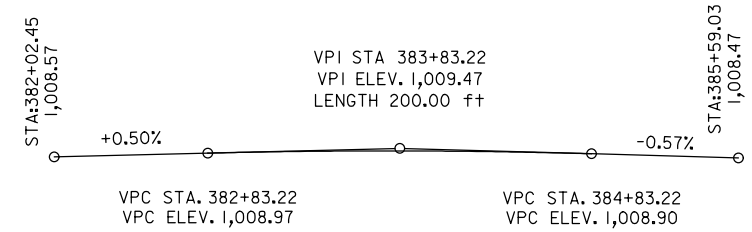
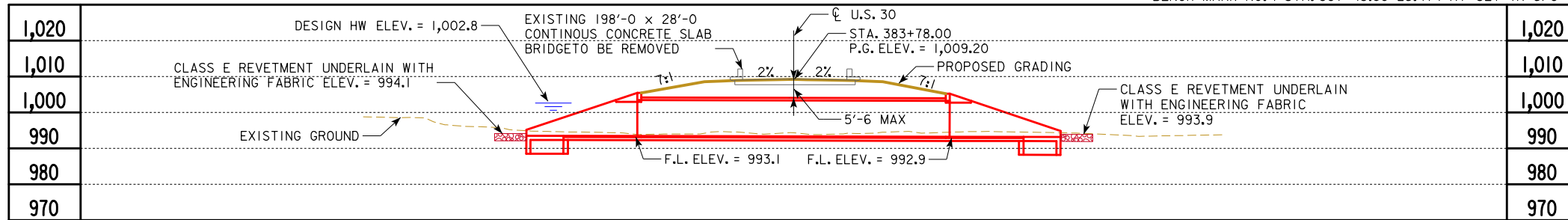
COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
None Provided	

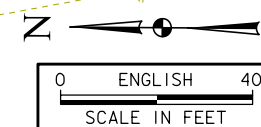
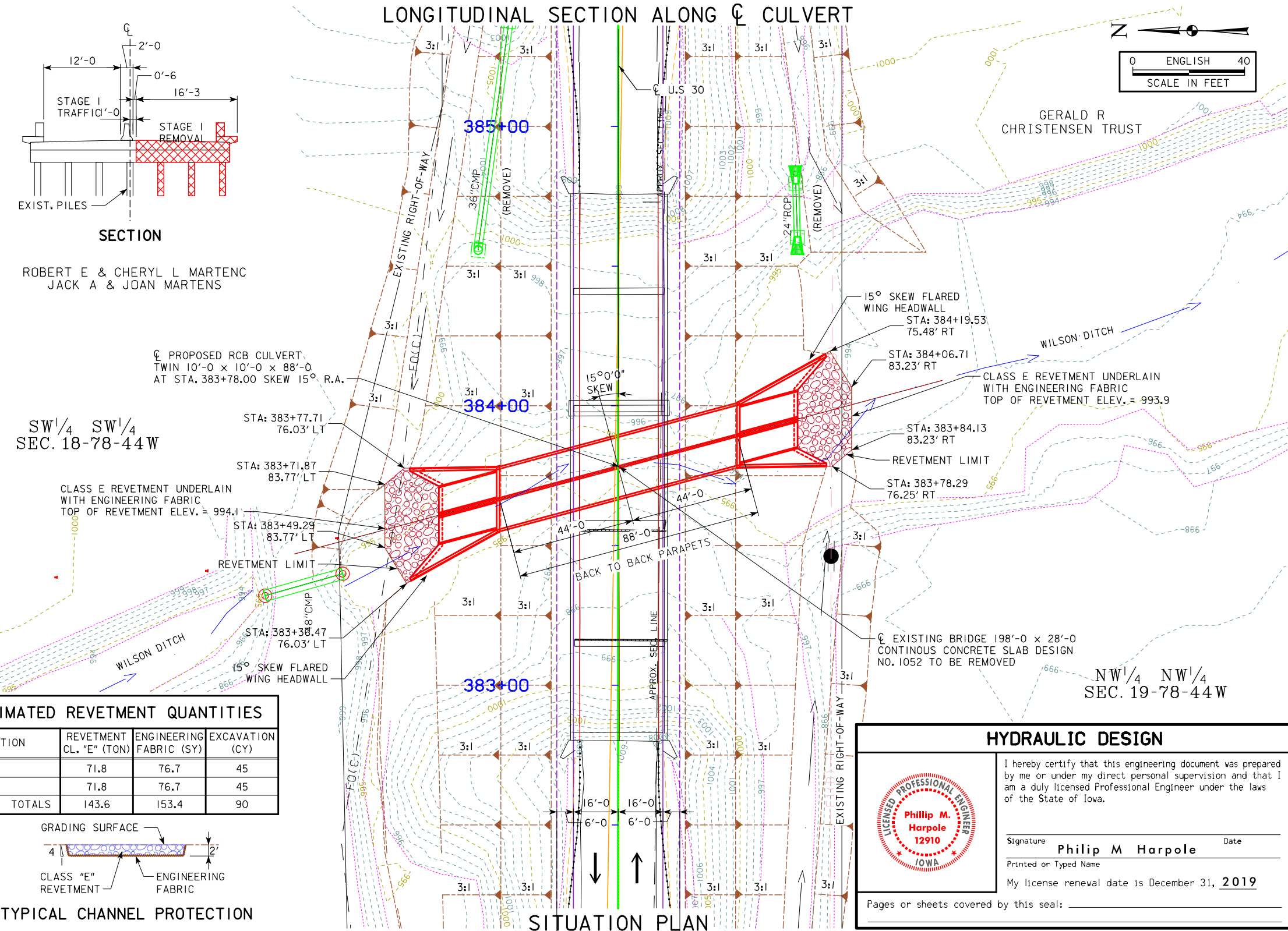






ROBERT E & CHERYL L MARTENC
JACK A & JOAN MARTENS

LONGITUDINAL SECTION ALONG CL CULVERT



- NOTES:**
- EXISTING 198'-0" x 28'-0" CONTINUOUS CONCRETE SLAB Bridge Design No. 1052.
 - DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.
 - FLOW LINE OF CULVERT NOMINALLY BURIED 1.0 FOOT.
 - RCB WILL BE COSTRUCTED UNDER THE EXISTING BRIDGE BEFORE CLOSING ANY LANES AND BEFORE REMOVING ANY OF THE EXISTING BRIDGE.

HYDRAULIC DATA

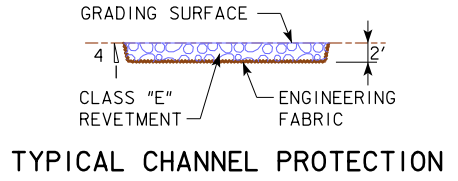
DRAINAGE AREA = 1,120 ACRES
 Q₅₀ = 1,080 CFS
 HW ELEV. = 1,002.8
 STREAM SLOPE = 4.18 FT./MI.
 Q₁₀₀ = 1,260 cfs HW=1,003.4
 Q₅₀₀ = 1,830 cfs HW=1,005.1

- UTILITIES LEGEND:**
- FOC — FIBER OPTIC LINE CENTURYLINK
 - E(B) — OVERHEAD ELECTRIC MID AMERICAN

LOCATION		TRAFFIC ESTIMATE	
U.S.30 BRIDGE OVER	2021 AADT	4600	V.P.D.
WILSON DITCH 2.1 MI W. I-29	2041 AADT	5400	V.P.D.
T-78N R-44W	2041 DHV	560	V.P.H.
SECTION 18 & 19	TRUCKS	26	%
ST. JOHNS TOWNSHIP	TOTAL		
HARRISON COUNTY	DESIGN ESALS		
FHWA NO. 27361			
BRIDGE MAINT. NO. 4307.1S030			
LATITUDE 41.550104°			
LONGITUDE -95.952787°			

ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	71.8	76.7	45
OUTLET	71.8	76.7	45
TOTALS	143.6	153.4	90



HYDRAULIC DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature: Philip M Harpole Date: _____
 Printed or Typed Name: Philip M Harpole
 My license renewal date is December 31, 2019

Pages or sheets covered by this seal: _____

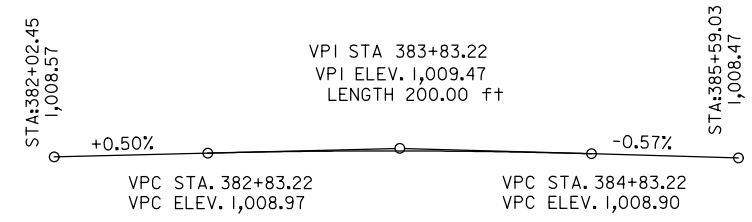
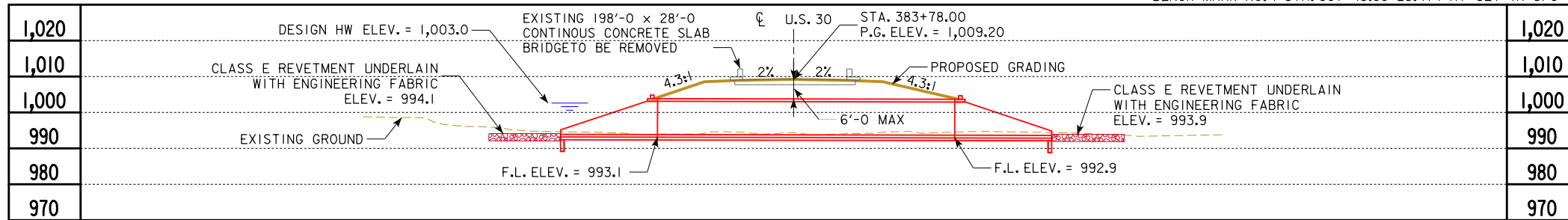
DESIGN FOR 15° SKEW R.A.

TWIN 10'-0" X 10'-0" X 88'-0" CAST IN PLACE CONCRETE CULVERT

SITUATION PLAN

STATION 383+78.00 JULY 2019
HARRISON COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ? OF ? FILE NO. 27361 DESIGN NO. 122



**PROPOSED PROFILE GRADE
U.S. 30**

NOTES:

- EXISTING 198'-0 x 28'-0 CONTINUOUS CONCRETE SLAB Bridge Design No. 1052.
- DRAINAGE THROUGH EXISTING CULVERT/CHANNEL MUST BE MAINTAINED THROUGHOUT CONSTRUCTION.
- FLOW LINE OF CULVERT NOMINALLY BURIED 1.0 FOOT.
- RCB WILL BE COSTRUCTED UNDER THE EXISTING BRIDGE BEFORE CLOSING ANY LANES AND BEFORE REMOVING ANY OF THE EXISTING BRIDGE.

HYDRAULIC DATA

DRAINAGE AREA = 1,120 ACRES
 $Q_{50} = 1,080$ CFS
 HW ELEV. = 1,003.0
 STREAM SLOPE = 4.18 FT./MI.
 $Q_{100} = 1,260$ cfs HW=1,003.7
 $Q_{500} = 1,830$ cfs HW=1,005.7

UTILITIES LEGEND:

- FOC — FIBER OPTIC LINE CENTURYLINK
- E(B) — OVERHEAD ELECTRIC MID AMERICAN

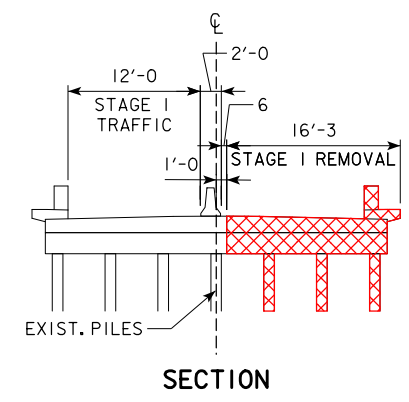
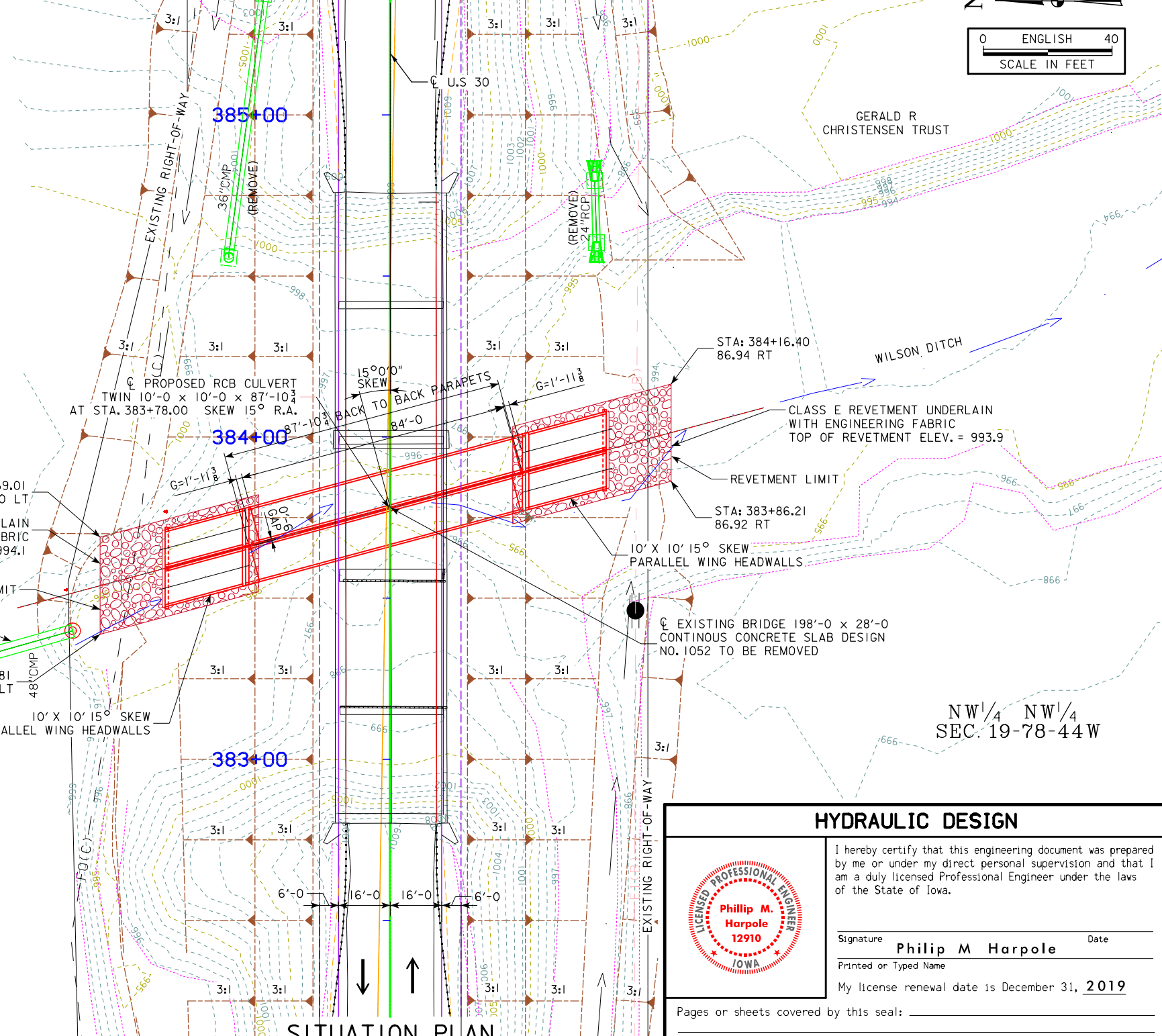
LOCATION

U.S.30 BRIDGE OVER WILSON DITCH 2.1 MI W. I-29 T-78N R-44W SECTION 18 & 19 ST. JOHNS TOWNSHIP HARRISON COUNTY IOWA
 FHWA NO. 27361
 BRIDGE MAINT. NO. 4307.1S030
 LATITUDE 41.550104°
 LONGITUDE -95.952787°

TRAFFIC ESTIMATE

2021 AADT	4600	V.P.D.
2041 AADT	5400	V.P.D.
2041 DHV	560	V.P.H.
TRUCKS	26	%
TOTAL DESIGN ESALS		

LONGITUDINAL SECTION ALONG CULVERT



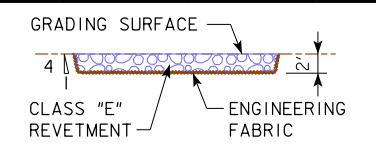
ROBERT E & CHERYL L MARTENC
 JACK A & JOAN MARTENS

SW 1/4 SW 1/4
 SEC. 18-78-44W

NW 1/4 NW 1/4
 SEC. 19-78-44W

ESTIMATED REVETMENT QUANTITIES

LOCATION	REVETMENT CL. "E" (TON)	ENGINEERING FABRIC (SY)	EXCAVATION (CY)
INLET	99.7	129.0	62.3
OUTLET	99.7	129.0	62.3
TOTALS	199.4	258.0	124.6



TYPICAL CHANNEL PROTECTION

HYDRAULIC DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature: Philip M Harpole Date: _____
 Printed or Typed Name: Philip M Harpole
 My license renewal date is December 31, 2019

Pages or sheets covered by this seal: _____

DESIGN FOR 15° SKEW R.A.
TWIN 10'-0 X 10'-0 X 87'-10 3/4
PRECAST CONCRETE CULVERT
SITUATION PLAN
 STATION 383+78.00 JULY 2019
HARRISON COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. ? OF ? FILE NO. 31684 DESIGN NO. 122

LINE STYLE LEGEND OF CROSS SECTION SHEETS (ROAD)

- - - - - - Existing Ground Line
- Proposed Template
- Proposed Topsoil Placement
- - - - - Additional Topsoil Removal
- Subgrade Treatment
- - - - - Granular Shoulder
- Pavement
- - - - - Existing Pipe\R/CB
- Proposed Pipe\R/CB
- Proposed Dike
- All Elements Associated with Proposed Entrances

LINE STYLE LEGEND OF CROSS SECTION SHEETS (SOILS)

- TS————— Topsoil (Class 10)
- SLOPE DRESSING — Slope Dressing Only
- CL 10————— Class 10 Materials
- SEL L0————— Select Loams And Clay-Loams
- SEL SA————— Select Sand
- UNS A————— Unsuitable Type A Disposal
- UNS B————— Unsuitable Type B Disposal
- UNS C————— Unsuitable Type C Disposal
- SHALE————— Shale
- WASTE————— Waste
- B&W LS————— Broken and Weathered Rock
- ROCK————— Solid Rock
- Boulders

Note: All layer lines and descriptions identify layers above the line.

Note: Vertical or near vertical lines connecting soil layers at edges of cross sections are only for the purpose of calculating template quantities and do not depict soil stratification.

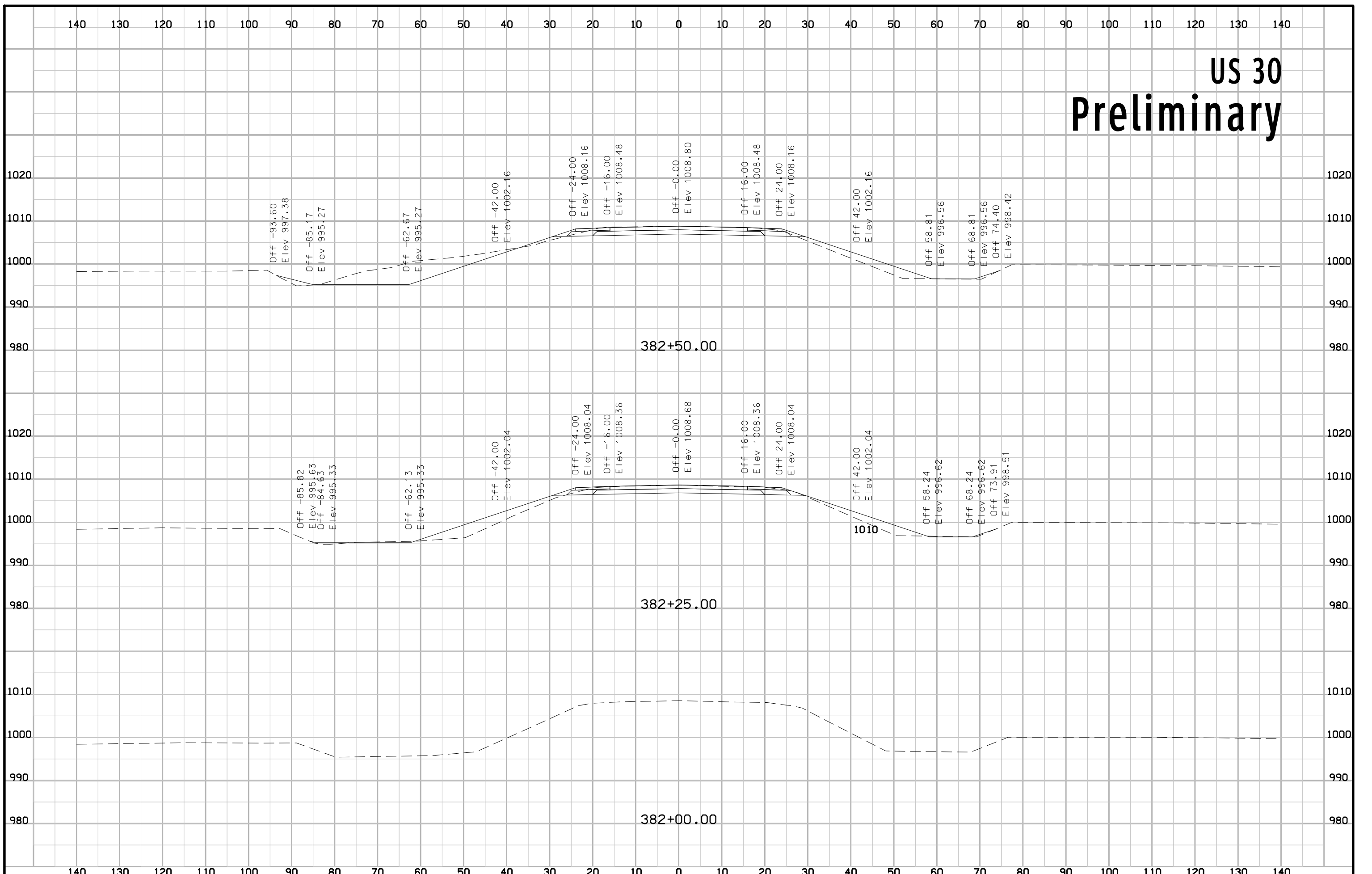
SYMBOL LEGEND OF CROSS SECTION SHEETS

- Existing ROW
|
Existing Right-of-Way Limit
- Proposed ROW
|
Proposed Right-of-Way Limit
- Temporary ROW
|
Temporary Right-of-Way Limit

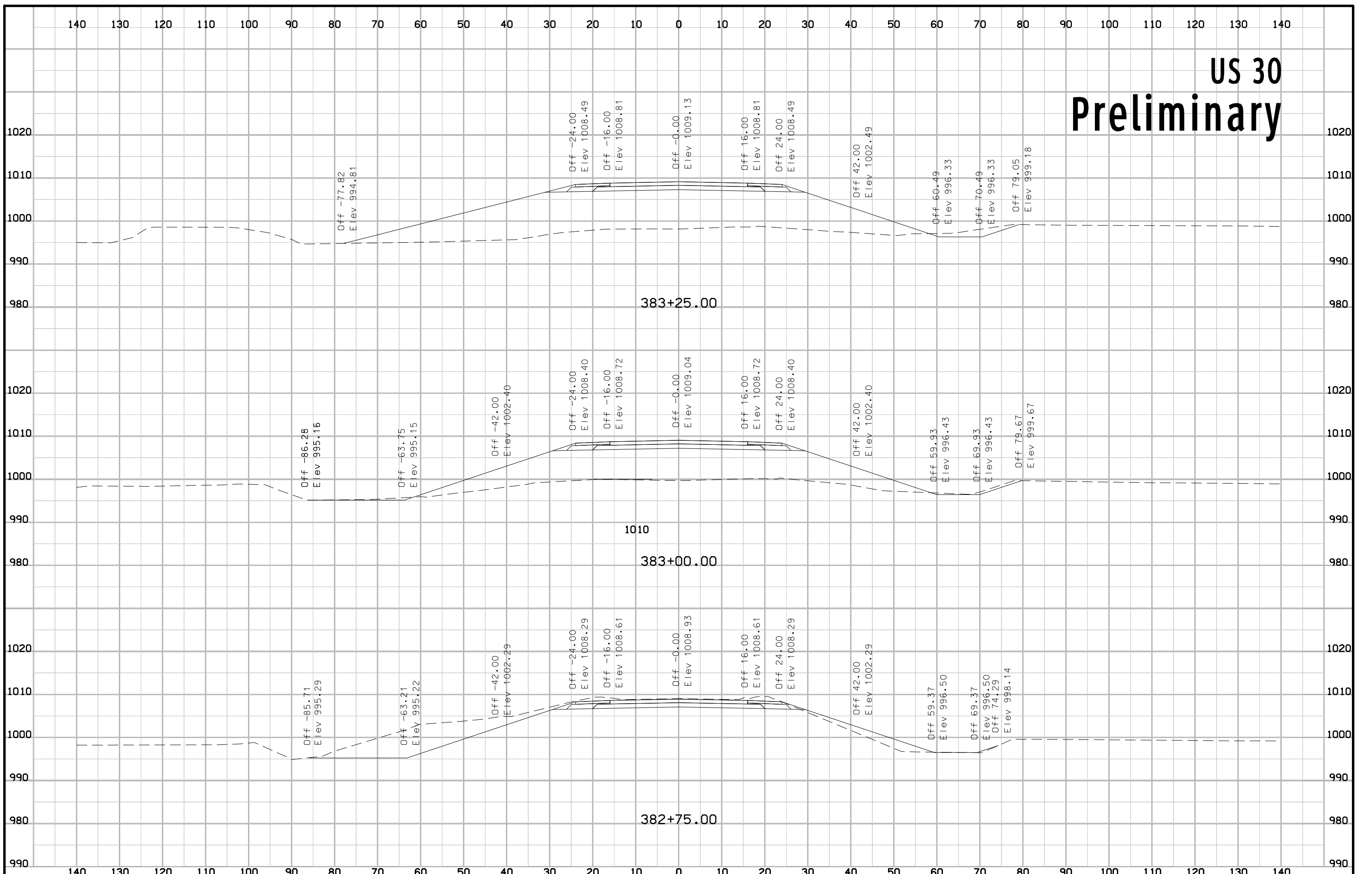
**CROSS SECTION
LEGEND AND SYMBOL
INFORMATION SHEET**

(COVERS SHEET SERIES W, X, Y, & Z)

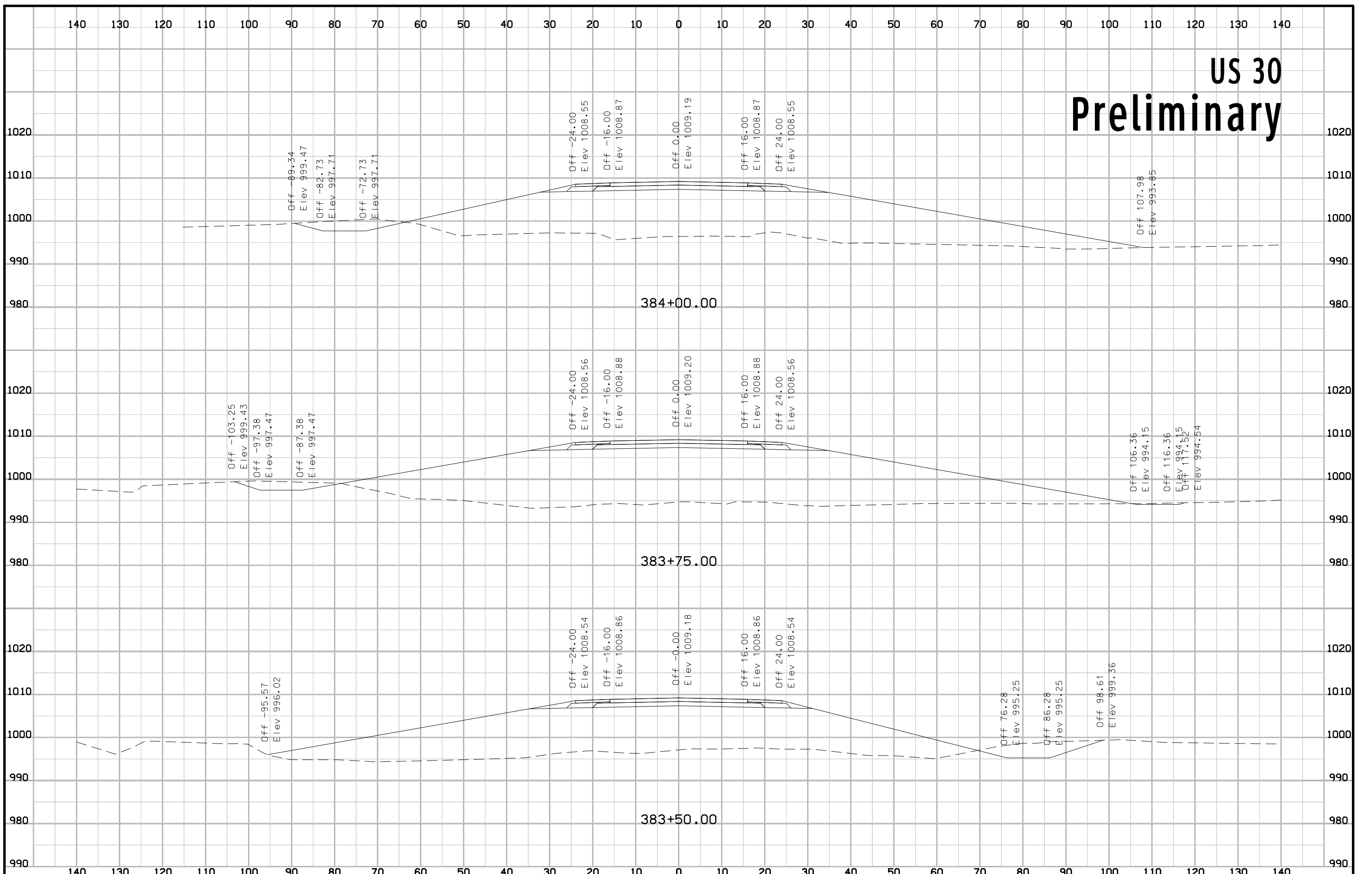
US 30 Preliminary



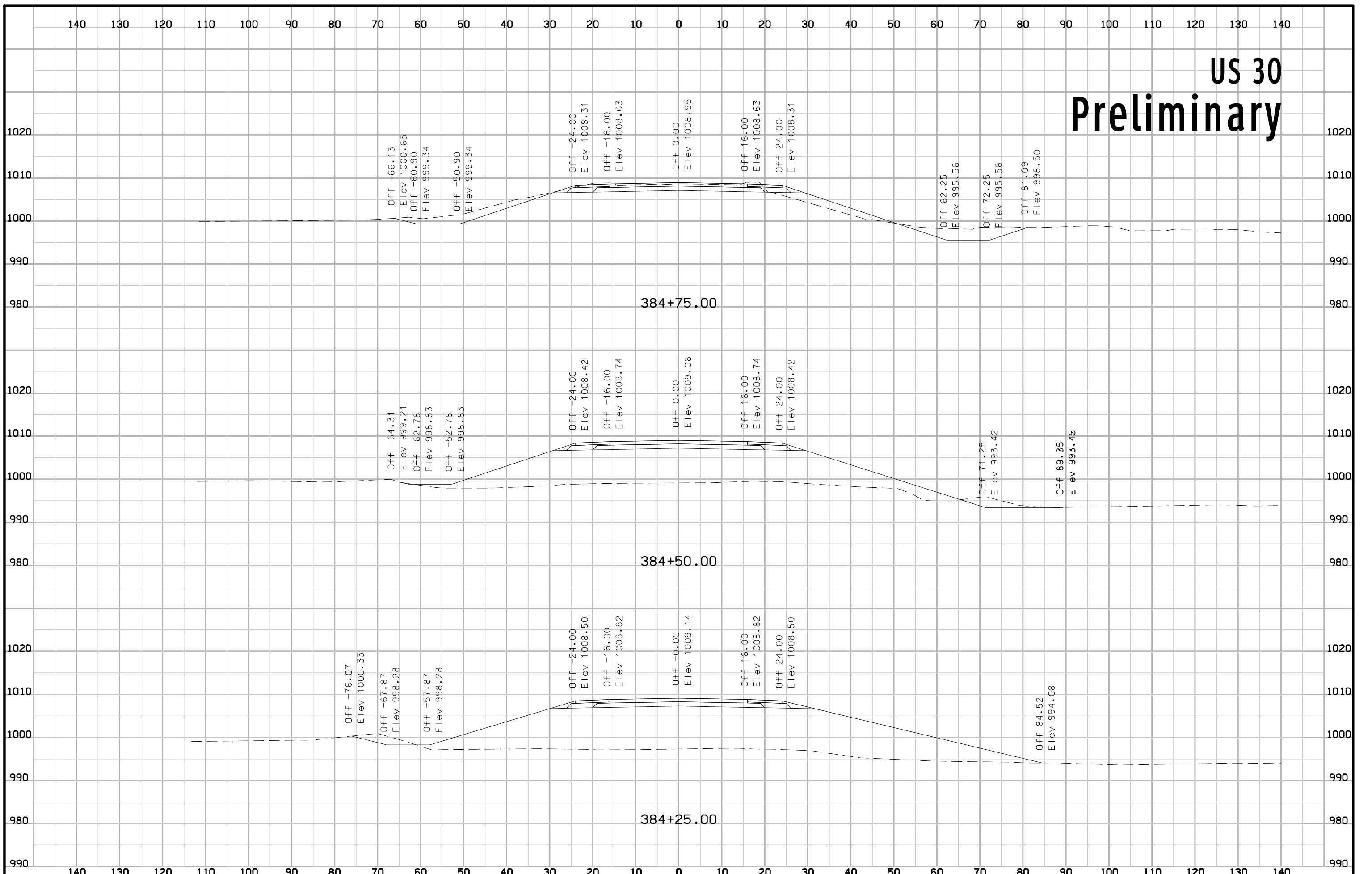
US 30 Preliminary



US 30 Preliminary



US 30 Preliminary



US 30 Preliminary

